

Thematic-based Literature Learning Assistance to Improve Numeracy Literacy Skills at Elementary School Level

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Abstract. In today's technological era, the flow of information flowing into society is so swift. For this reason, students are required to master a variety of information and knowledge materials. Reading skills play a very important role in everyday life. But not just reading the words, reading skills include the ability to understand the explicit and implied meaning of sentences, paragraphs, and the whole text as a unit. This shows that reading is a complex and challenging process. Reading skills are also formed through a series of long processes. Therefore, learners starting from the primary school level need to master strategies to improve reading skills in all subjects to understand learning materials. Learners should be taught reading skills according to their level. Without mastering reading skills at their level, learners will not be able to access knowledge. Reading skills are also a measure of global competence tested in the Program for International Student Assessment (PISA). Unfortunately, the reading scores of Indonesian students continue to decline from year to year. Seeing these conditions, strengthening literacy in Indonesian language subjects needs to be done by teachers as the frontline of the nation's education process. Teachers are expected to assist students to understand reading material and train students to reason through reading texts.

Keywords: teacher mentoring, Indonesian language learning, numeracy literacy, primary school.

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1. Introduction

Numeracy refers to the ability to understand and work with numbers, whereas numeracy is a term used to describe the level of mathematical skills and knowledge a person possesses. Literacy is the most ancient form of literacy in the recorded history of human civilization. Both functional literacies are highly practical and valuable in daily life. Numeracy abilities are essential for effective learning, working, and interacting in all aspects of life. Hence, numeracy literacy is cultivated methodically and consistently, using both in-class learning activities and extracurricular learning activities.

Numeracy literacy extracurricular activities aim to enhance and reinforce numeracy abilities taught in the classroom. Engaging in extracurricular activities is both enjoyable and demanding, as it helps to foster the potential of youngsters. The development of children's potential is influenced by their degree of development. This enjoyable and demanding notion also pertains to the choice of reading materials.

Numeracy literacy refers to the knowledge and abilities necessary for comprehending numbers, symbols, and evaluating quantitative information such as graphs, tables, and charts. It is of utmost importance for the current generation. Proficient numeracy literacy enables learners to effectively utilize their mathematical knowledge in practical situations.

Enhancing the mathematical literacy of students in elementary schools can be effectively and systematically carried out by focusing on the local government, education unit, and classroom levels.

Numeracy literacy can be acquired by habituation, which can be integrated into both academic and recreational activities.

Numeracy literacy encompasses a wide range of subjects, including not only mathematics but also other literacies such as culture or citizenship. The elements of numeracy literacy in Mathematics include numbers, operations and counting, geometry and measurement, data processing, statistical interpretation, spatial thinking, and patterns.

Numeracy literacy refers to the ability to effectively utilize numbers and symbols in basic mathematics to solve real-world problems in various contexts. It also involves the capacity to analyze information presented in different formats, such as graphs, tables, and charts, and use the findings to make predictions, draw conclusions, and make informed decisions. Numeracy can be succinctly defined as the aptitude to utilize numerical concepts and arithmetic skills in practical situations. Numeracy literacy encompasses the capacity to comprehend and analyze quantitative data that is present in our surroundings. Numeracy literacy refers to the aptitude or mastery of acquiring knowledge and competencies to effectively utilize mathematics with confidence in various spheres of life. Numeracy literacy encompasses a comprehensive understanding of mathematical concepts, proficiency in mathematical abilities, the application of mathematical reasoning, and the cultivation of good attitudes towards mathematics.

Numeracy and math competency are distinct concepts. Both are grounded on identical knowledge and skills, but the distinction resides in the degree to which that knowledge and talents are empowered. Possessing mathematical knowledge alone does not guarantee someone's numeracy. Numeracy encompasses the aptitude to utilize mathematical principles and regulations in practical scenarios. When the problem is frequently unorganized, possesses numerous methods of resolution, or perhaps lacks a definitive solution, and is connected to nonmathematical elements.

For instance, if a group of 40 individuals is being transported on an excursion and the minibus has a capacity of 12 people, the mathematical calculation shows that 3.333333 minibus trips would be required to accommodate all the passengers. The number is deemed excessive, hence it is truncated to 3 minibuses. Nevertheless, if a seat can accommodate only one individual, it implies that there are four individuals who do not have a seat. Hence, the optimal quantity of minibuses to be procured is 4. It is important to acknowledge that numeracy necessitates the acquisition of mathematical knowledge that is taught in the curriculum. Nevertheless, acquiring knowledge in mathematics alone does not automatically cultivate proficiency in numeracy.

The phases of numeracy development, which include informal numeracy, numeracy knowledge, and formal numeracy, can be used to assess children's numeracy skills (Purpura, Baroody & Lonigan, 2013). During the informal numeracy stage, children possess the ability to count systematically and identify the attributes of items. Informal numeracy development takes place during the early stages of infancy, from early childhood to early elementary school. As pupils begin early elementary school, their numeracy skills transition to the level of numeracy knowledge. Numeracy progresses towards more complex and theoretical ideas (Sarama & Clements, 2009). Students acquire proficiency in utilizing mathematical symbols and language through formal schooling. During the formal numeracy stage, children acquire advanced mathematical skills as they engage with complex mathematical operations. This is necessary because arithmetic operations pose mathematical challenges that extend beyond practical applications in daily life. Children will acquire proficiency in fundamental mathematical operations, including addition, subtraction, multiplication, and division. To enhance students' comprehension of arithmetic operations, the teacher incorporates basic arithmetic operations into the structure of narrative puzzles.

In Indonesian Language and Literature learning, numeracy is needed when learners use and understand patterns of order and relationships in language. As learners gain knowledge about concepts like time, number, and space across various cultures, they can then apply this understanding to effectively use graphs and tables in written and oral presentations to support arguments or demonstrate spatial understanding. Additionally, they can analyze and evaluate the layout and structure of texts.

By identifying numeracy in the subjects they teach, especially Indonesian language teachers can help students to explicitly connect between students' mathematical knowledge and how to use this knowledge in Indonesian language subjects which then aims to improve learning outcomes.

Thomas Alva Edison Private Elementary School located at Jl. Denai No.131, Tegal Sari Mandala II, Kec. Medan Denai, Medan City, North Sumatra is one of the educational units with elementary school level at Jl. Denai No.131, Tegal Sari Mandala II, Kec. Medan Denai. In carrying out its activities, Thomas Alva Edison Private Elementary School is under the auspices of the Ministry of Education and Culture, with the principal Mrs. Margaret, M.Pd. has a total of 9 teachers. Has a total of 164 students spread across 6 classes.

Literacy and numeracy activities are carried out in grade 3 with 25 students and grade 4 with 28 students.

2. Method

Community Service Activities (PKM) are carried out with a mentoring system. The literacy and numeracy program assistance team is three lecturers and three students in each class as a field implementation team. Literacy and numeracy activities were carried out in class 3 with 23 students and in class 4 with 28 students. Specifically in the literacy and numeracy activities at school, the steps taken were: (1) The preparation stage includes: (a) Identification of problems experienced by partner schools, (b) analyzing partner problems, (c) coordinating with partners and making cooperation agreements between the service implementation team and partners; (2) Implementation stage, a team of lecturers who accompany students in assisting the implementation of activities for one (1) month of activities starting from July 12, 2023 - August 10, 2023.

The implementation of activities was carried out for 5 weeks, where in week 1, the team of lecturers and students identified specific problems and coordinated the planning of activities to be carried out for 5 weeks along with the schedule. Activities from week 2 to week 5 carry out learning and non-learning activities, especially based on literacy and numeracy; (3) The evaluation stage, carried out by the implementing team (supervisors) with students.

The evaluation stage is carried out qualitatively by the implementing team and partners in the implementation of the discussion of the achievements and constraints of the community service activity program which aims for improvement and follow-up.



Fig.1. Primary school numeracy literacy activity.

3. Results and Discussion

In the first week, the activities carried out centered on identifying existing problems. Both problems arising from the learning process and problems that occur due to school infrastructure that does not support the learning process. In addition, coordination was also carried out with Indonesian Language Subject Teachers, Classroom Teachers, Head of Partner Schools, and Teachers at Partner Schools regarding existing problems, efforts to overcome problems and activities or activities that will be carried out in the future.

From this activity, several problems can be identified, namely: (1) Insufficient familiarity with the notations and symbols used in mathematical models. This syndrome hinders individuals' capacity to solve real-world situations that involve mathematical ideas. (2), it causes difficulty in comprehending information presented in tables and graphs, which consequently affects their ability to draw accurate conclusions.

After identifying the problem and coordinating with several parties, the mentoring activities began. Assistance with learning activities in the classroom took place for four face-to-face sessions. Learning is done by prioritizing students' numeracy literacy skills and focusing on conceptual understanding rather than procedural. This is in accordance with the nature of mathematics which requires precision and certain

expressions, which are generally not displayed in ordinary spoken language. Numeracy is the ability to use mathematics to solve problems and meet the demands of everyday life (Carolina et al., 2020).

The numeracy literacy mentoring activity in the classroom takes place as shown in Figure 2 below.



Fig.2. Numeracy Literacy Assistance Activities in the Classroom.

Numeracy literacy refers to an individual's capacity to employ logical thinking. Reasoning refers to the process of examining and comprehending assertions by manipulating mathematical symbols or language often seen in daily life. It involves articulating these statements through written or spoken communication (Simarmata et al., 2020). Numeracy refers to the proficiency in comprehending, utilizing, interpreting, and conveying mathematical concepts and information to effectively handle the mathematical requirements encountered in diverse real-world scenarios (Tiede et al., 2021). Numeracy literacy is an integral part of mathematics, meaning that the elements involved in numeracy literacy cannot be detached from the subject matter covered in mathematics (Lindawati, 2018). Numeracy literacy is a crucial skill that may accurately forecast an individual's level of schooling and job prospects. In order for literacy and numeracy learning to be applicable and useful in the classroom, the topics must be directly related to the students' life.

The learning process should be rooted in inquiry and reflection, foster collaboration, be consistent and thorough, and be enhanced through the use of modeling, coaching, and collective problem-solving. Furthermore, it should be relevant and applicable to their daily lives.

Numeracy, reading, and writing are crucial competencies for individuals to actively participate in modern society (Tiede et al., 2021). Nevertheless, certain empirical investigations suggest that a deficiency in math-related abilities is associated with a reduced utilization of ICT. The utilization and availability of internet technologies are closely linked to the health literacy and numeracy skills of low-income persons (Puspito, 2017).

Specifically, the researchers discovered that those with poorer levels of health literacy and numeracy skills had a reduced likelihood of internet access. Moreover, there is a strong correlation between numeracy abilities and digital skills, specifically in computer-related tasks. Individuals with lower numeracy skills are less inclined to utilize computers and the internet compared to those with greater numeracy and digital skills (Hong et al., 2020). Consequently, individuals with lower levels of math-related and digital literacy are less likely to get the potential advantages of enhancing virtual accessibility through the utilization of ICTs.

4. Conclusions

The community service initiative was executed at Thomas Alva Edison School located in Jl. Denai No.131, Tegal Sari Mandala II, Kec. Medan Denai, Medan City, North Sumatra. This collaborative activity between lecturers and students is a form of mentorship aimed at enhancing the numeracy literacy skills of primary school pupils. It is achieved through the use of thematic learning design in Indonesian language topics. The mentorship activities encompass three main components: (1) providing an overview of the school's scope; (2) assisting classroom instructors in enhancing numeracy literacy instruction; and (3)

facilitating the integration of technology into teaching and learning practices. This community service initiative is a joint effort between professors and students, facilitated by the Research and Community Service Institute (LPPM) of Medan State University. It involves an annual routine PKM scheme, where projects are carefully chosen, executed, and assessed. The mentoring activities have concluded that the reading and numeracy program at the primary school level has been successful, efficient, effective, and ideal.

References

- Abidin, dkk. 2017. Pembelajaran Literasi Strategi Meningkatkan Kemampuan Literasi Matematika, Sains, Membaca, dan Menulis. Jakarta: Bumi Aksara
- Azimah, Riadul dan Otang Kurniawan. 2019. Implementasi Gerakan Literasi Sekolah Dalam Pembelajaran Di Kelas Tinggi. *Jurnal Pajar (pendidikan dan pengajaran)*. 3 (4). (hlmn. 934- 947).
- Suyono, dkk. 2017. Implementasi Gerakan Literasi Sekolah Pada Pembelajaran Tematik di Sekolah Dasar. *Sekolah Dasar*. 26 (2). (hlmn. 116-123).
- Wendra, I. Wayan. 2019. Penulisan Karya Ilmiah (Penulisan Proposal Penelitian, Skripsi, dan Artikel). Singaraja: Undiksha
- Sugiyono. 2017. Metode Penelitian Kualitatif (untuk penelitian yang bersifat eksploratif, enterpretif, interaktif, dan konstruktif). Bandung: Alfabeta.
- Agustiana, V., Rahmatunisa, W., & Darsih, E. (2022). Penguatan Literasi Bahasa Inggris Siswa SD Melalui Storytelling di Desa Kalimanggis Wetan. *KALANDRA: Jurnal Pengabdian Kepada Masyarakat*, 01(6), 159–164.
- Aritonang, B.D., Citra, I. A., Putu, N., & Tirta, D. (2021). Peningkatan Kemampuan Literasi Anak Sd. Seminar Bahasa, Sastra dan Pengajarannya (PEDALITRA I) Penguatan Literasi Melalui Pengajaran Bahasa dan Sastra. *Pedalitra I*, 297–309.
- Daroin, A. D., Santoso, O. V. K., Pranidia, D. M. A., & Halimah, L. L. (2022). Peningkatan Kemampuan Literasi dan Numerasi Siswa di SDN2 Gombang Tulungagung. *D'edukasi: Jurnal Pengabdian Masyarakat*, 2(1), 38-49.
- Harahap, D. G. S., Nasution, F., Nst, E. S., & Sormin, S. A. (2022). Analisis Kemampuan Literasi Siswa Sekolah Dasar. *Jurnal Basicedu*, 6(2), 2089–2098. <https://doi.org/10.31004/basicedu.v6i2.2400>
- Humaira, M. A., Sudjani, D. H., Sya, M. F., Indra, S., Syamsudin, D., & Rusli, R. K. (2021). Penguatan Literasi Siswa Melalui Story Telling Bahasa Indonesia, Bahasa Inggris, Bahasa Arab Di Sekolah Menengah Pertama. *Jurnal Karya Abdi*, 5(3), 547–552. <https://online-journal.unja.ac.id/JKAM/article/view/16315>
- Jati, L. T. S., & Sumarni, W. (2020). Dampak Pandemi Covid-19 Terhadap Perkembangan Anak Sekolah Dasar. *Prosiding Seminar Nasional Pascasarjana (PROSNAMPAS)*, 3(1), 777–783. <https://proceeding.unnes.ac.id/index.php/snpsca/article/download/667/585>
- Kharizmi, M. (2015). Kesulitan Siswa Sekolah Dasar Dalam Meningkatkan Kemampuan Literasi. *Jurnal Pendidikan Almuslim*, II(2), 11–21.
- Lisnawati, I., & Ertinawati, Y. (2019). Literat Melalui Presentasi. *Metaedukasi*, 1(1), 1–12.
- Magdalena, I., Handayani, S. S., & Putri, A. A. (2021). Analisis faktor yang mempengaruhi keterampilan berbicara siswa di SDN Kosambi 06 Pagi Jakarta Barat. *Nusantara: Jurnal Pendidikan Dan Ilmu Sosial*, 3, 107–116.
- Nirmala, S. D. (2022). Problematika Rendahnya Kemampuan Literasi Siswa Di Sekolah Dasar. *Primary: Jurnal Pendidikan Guru Sekolah Dasar*, 11(2), 393. <https://doi.org/10.33578/jpkip.v11i2.8851>
- OECD. (2019). Programme for International Student Assessment (PISA). The Language of Science Education, 79–79. https://doi.org/10.1007/978-94-6209-497-0_69
- Rachman, B. A. R., Firyalita Sarah Fidaus, Nurul Lailatul Mufidah, Halimatus Sadiyah, & Ifit Novita Sari. (2021). Peningkatan Kemampuan Literasi dan Numerasi Peserta Didik Melalui Program Kampus Mengajar Angkatan 2. *Dinamisia: Jurnal Pengabdian Kepada Masyarakat*, 5(6), 1535–1541. <https://doi.org/10.31849/dinamisia.v5i6.8589>
- Retnaningdyah, P. (2022). Panduan Gerakan Literasi Sekolah di sekolah menengah pertama. Direktorat Jenderal Pendidikan Dasar dan Menengah Kementerian Pendidikan dan Kebudayaan.

- Rohim, D. C., & Rahmawati, S. (2020). Peran Literasi Dalam Meningkatkan Minat Baca Siswa Di Sekolah Dasar. *Jurnal Review Pendidikan Dasar: Jurnal Kajian Pendidikan Dan Hasil Penelitian*, 6(3), 230–237. <https://doi.org/10.26740/jrpd.v6n3.p230-237>
- Sumarti, E., Jazeri, M., Manggiasih, N. P., & Masithoh, D. (2020). Penanaman Dinamika Literasi pada Era4.0.Literasi: *Jurnal Bahasa dan Sastra Indonesia serta Pembelajarannya*,4(1).
- (2016). *Panduan Gerakan Literasi Sekolah Di Sekolah Sekolah Dasar*. Direktorat Jenderal Pendidikan Dasar Dan Menengah Kementerian Pendidikan dan Kebudayaan
- Anderson, L. W & Karthwohl, D. R. (2014). *Kerangka landasan untuk pembelajaran, pengajaran, dan asesmen revisi taksonomi pendidikan bloom*. Pustaka Pelajar: Yogyakarta
- Dikdas. (2019). *Pengembangan pembelajaran berorientasi hots*. Dikdas Kemdikbud: Jakarta
- Guba, E.G & Lincoln, Y.S. (1985). *Effective evaluation*. San Francisco: Jossesey-Bas Publishers.
- Numerasi Siswa Dalam Pemecahan Masalah Tidak Terstruktur. *KALAMATIKA Jurnal Pendidikan Matematika*, 4(1), 69–88.
- Mahmud, Muhammad Rifqi, & Pratiwi, I. M. (2019). Literasi Numerasi Siswa Dalam Pemecahan Masalah Tidak Terstruktur. *KALAMATIKA Jurnal Pendidikan Matematika*, 4(1), 69–88. <https://doi.org/10.22236/kalamatika.vol4no1.2019pp69-88>
- Van de Weijer-Bergsma, E., Kroesbergen, E. H., & Van Luit, J. E. H. (2015). Verbal and visual-spatial working memory and mathematical ability in different domains throughout primary school. *Memory and Cognition*, 43(3), 367–378. <https://doi.org/10.3758/s13421-014-0480-4>.
- Yayuk, E., & Husamah. (2020). The Difficulties of Prospective Elementary School Teachers in Item Problem Solving for Mathematics: Polya’s Steps. *Journal for the Education of Gifted Young Scientists*, 8(1), 361–368.
- Yayuk, E., Purwanto, As’ ari, A. R., & Subanji. (2020). Primary School Students’ Creative Thinking Skills in Mathematics Problem Solving. *European Journal of Educational Research*, 9(3), 1281–1295.
- Yunita Anindya, E. F., Suneki, S., & Purnamasari, V. (2019). Analisis Gerakan Literasi Sekolah Pada Pembelajaran Tematik. *Jurnal Ilmiah Sekolah Dasar*, 3(2), 238. <https://doi.org/10.23887/jisd.v3i2.18053>.
- Yustitia, V., & Juniarso, T. (2020). Literasi Matematika Mahasiswa Dengan Gaya Belajar Visual. *Malih Peddas (Majalah Ilmiah Pendidikan Dasar)*, 9(2), 100–109.
- Zuhri, M. dkk. (2018). *Buku pegangan pembelajaran berorientasi pada keterampilan berpikir tingkat tinggi: Program peningkatan kompetensi pembelajaran berbasis zonasi*. Dirjen Guru dan Tenaga Kependidikan Kemendikbud: Jakarta